sary antibiotic use. Public health campaigns may have an important role in improving appropriate antibiotic prescribing.

PHP9

ASSESSMENT OF DIAGNOSTIC NEED FOR MAGNETIC RESONANCE IMAGING IN MEDICARE PATIENTS WITH PACEMAKER IMPLANTS

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OBJECTIVES: To estimate the potential unmet need for Magnetic Resonance Imaging (MRI) among Medicare patients with pacemaker implants, via the prevalence of diagnoses and conditions for which MRI is the preferred investigation method. **METHODS:** The data analyzed comprised of fee-for-service portion of the 2008 Medicare patient population. Using this sample, two issues were examined: the prevalence of the diseases for which MRI is the preferred imaging modality, and the uptake rates of all imaging modalities for MRI-indicated beneficiaries with pacemaker implants compared with those having no implants. For each of those diseases for which MRI is the preferred modality we also identified any trade-offs between lower MRI rates and higher rates for other imaging modalities in pacemaker-implanted compared with non-implanted patients. **RESULTS:** There was almost no use of MRI in the pacemaker-implanted population, whereas 13% of patients without any kind of implant received an MRI in 2008. Clinical practice appears in line with the contraindication for MRI in pacemaker-implanted patients. Cancer of the CNS and suspected Stroke are conditions which require timely, accurate imaging for good therapeutic decision making. A total of 73% and 41% of non-paced subjects received whole body MRI for these conditions respectively, compared with 1% of paced subjects for each disease. Similar diagnostic discrepancies were observed for Motion disorders, Dementia, Chronic orthopaedic pain and spinal disorders. Pacemaker implanted patients also had high rates of co-morbidities. **CONCLUSIONS:** There seems to be a large unmet clinical need for pacemakers and other implanted cardiac devices which allow MRI to be used as a diagnostic method. The very high rate of MRI use in non-implanted patients with acute, progressive and often fatal conditions of stroke and cancer, and its absence of use in the same patient groups with implants is a concern. The use of MRI conditional cardiac devices would facilitate greater diagnostic method choice.

PHP10

THE MARGIN BETWEEN ACQUISITION COSTS AND REIMBURSEMENT PRICES OF GENERIC DRUGS (YAKKASA) IN JAPAN: CURRENT STATUS AND DETERMINANTS

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OBJECTIVES: The margin between the price of a drug and its reimbursement price (yakkasa) is determined by negotiation between wholesalers and medical institutions in Japan. The Ministry of Health, Labour and Welfare (MHLW) claims that the yakkasa reflects the market value of drugs. Factors, however, influencing the yakkasa have not been clarified. The aim of this study was to investigate the current status and determinants of the yakkasa of generic drugs. **METHODS:** The reimbursement price of a drug, which is determined by the MHLW in Japan, decreases in proportion to the yakkasa every two years. To calculate the yakkasa, we used the drug price lists of 2006, 2008, and 2010. We identified generic drugs with a higher percentage margin for each year, and averaged the yakkasa by drugs. We then investigated longitudinal trends in the range of the yakkasa. Furthermore, we explored factors associated with the larger percentage margin. **RESULTS:** The generic drugs with a higher percentage margin were: doxazosin mesilate (30.7%), famotidine (29.7%), and manidipine hydrochloride (29.6%) in 2006; ofloxacin (31.1%), cetirizine hydrochloride (27.4%), and actarit (25.8%) in 2008; and ofloxacin (24.1%), cetirizine hydrochloride (23.2%), and levofloxacin (22.5%) in 2010. The yakkasa was correlated with the logarithmic capital of generic manufacturers, i.e., generic drugs developed by larger companies had smaller margin. The coefficient of variance for the yakkasa decreased every two years with the revision of drug prices. **CONCLUSIONS:** The generic drugs prescribed frequently or developed recentlyhad a higher percentage margin. The relationship between the yakkasa and capital might signify the fact that more competitive manufacturers tend to paysmaller margin, since medical institutions have no incentive to buy drugs from smaller manufactures, unless the margin is larger.

PHP11

TIME TRENDS AND DETERMINANTS OF PHARMACEUTICAL EXPENDITURE IN CHINA IN 1990-2009

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OBJECTIVES: China's national pharmaceutical system has multiple Objectives: to develop the domestic pharmaceutical industry and encourage innovation, to control total pharmaceutical expenditure (TPE) which represents the largest component of total health expenditure (THE) in China, and to ensure equities for poor and uninsured patients. The challenges to the current system with distorted market incentives resulted in unaffordable drug costs and questionable prescribing practices that undermine public health. This study intended to examine the time trends and determinants of total pharmaceutical expenditure in China. **METHODS:** Total pharmaceutical expenditures over 1990-2009 were explained by amount of prescriptions dispensed, proxy of health utilization, and price index over years including medical CPI. Data from China National Health Accounts Report was used. Time trends of TPE as share of THE (TPE/THE) and of GDP (TPE/GDP), and the relationship between TPE and GDP were examined descriptively. The growth of TPE was examined after adjusting for health utilization. Determinants of TPE/THE and TPE/GDP were investigated by time-series regression models. **RESULTS:** Descriptive analyses showed TPE/THE and TPE/GDP grew over the years 1990-2009. THE/GDP grew faster in the recent few years than TPE/GDP. TPE per visit still rose over years after adjusting for health utilization (inpatient and outpatient services). However, health utilization was not shown the growth pattern along with the GDP growth over 1990s. Time-series analyses showed TPE/THE was negatively influenced by GDP (p = 0.039) and medical CPI (p=0.021). TPE/GDP was positively influenced by price index of prescriptions (p=0.000) and amount of health service use including inpatient (p= 0.012) and outpatient visits (p=0.003). **CONCLUSIONS:** Both TPE and THE increased over time with the pace of GDP growth. The study provided evidence of increasing economic burden on patients imposed by TPE in China. Rapid growth in the China economy, however, may ameliorate the overall TPE burden.

PHP12

THE EVALUATION OF VACCINE REFRIGERATOR TEMPERATURE SURVEY CONDUCTED BY PRIMARY CARE UNITS OF SONGKHLA HOSPITAL

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OBJECTIVES: To evaluate the quality and improve the quality control of vaccine refrigerators at primary care units; PCU. **METHODS:** It was a quasi-experimental study; pre-post intervention descriptive design was studied. Computerized Transit temperature data loggers were used to monitor vaccine refrigerator temperatures at 19 PCU under the authority of Songkhla hospital. Data loggers, monitoring temperatures from $-40\ ^0$C to $+85^0$C, were programmed to record every 30 minutes for 15 days. Percentage of frequency which temperatures were out of 2-8 ^{0}C range and maximum/minimum temperatures had been used for this evaluation. Results of the study were sent back to PCU for adjustment.Post adjustment data were collected for assessment **RESULTS:** Vaccine Refrigerators at PCU were household models.Refrigerator ages average is 7.37 years. Before intervention, average percentage of frequency, which temperatures were $<2\ ^0$C and $>8\ ^0$C, was 13 .76 % and 2.03% (range 0%-81% and 0%-11.23% respectively).19 units recorded temperatures below $2\ ^0$C and above $8\ ^0$C at one point. The lowest and highest temperatures recorded were $26.20\ ^0$C and -7^0C. After assessment, 8 units required modifications and 11 units got new refrigerators. Refrigerators age average was 2.68 years. Average percentage of frequency, temperatures $<2\ ^0$C and $>8\ ^0$C, was 3.31% and 0.88% (range 0%-51.48% and 0.88%-5.34% respectively). 6 units had no out of range temperatures. The lowest and highest temperatures were $-2.5\ ^0$C and 19^0C. The percentage of frequency was decreased in 18 units but not statistically significant. However, the lowest and highest temperatures was statistically significant decreased (p-value = 0.004, 0.013 respectively) **CONCLUSIONS:** Using data logger feedback can help maintain vaccine cold chain standard (2-8 ^{0}C). A data logger should be used continually to monitor temperature in a vaccine refrigerator.

PHP13

AFFORDABILITY OF ANTIBACTERIAL MEDICINES IN IRAN DURING 2001-2010

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OBJECTIVES: Affordability is one of the main objectives of national drug policies but there are no clear indicators to determine whether a medicine is affordable. The share of medication in consumer basket, comparing to Gross Domestic Product (GDP) per capita and comparing to the daily income of the lowest paid worker in the government have been some methods to judge about the affordability. This study tries to investigate affordability of antibacterial therapy in Iran during last decade (2001-2010). **METHODS:** Annual sales of antibacterial medicines for systemic use (J01 based on ATC classification) were gathered from Ministry of Health and were crosschecked by sample data from suppliers and distributors. The cost of medicines according to DDD (Defined Daily Dose) was calculated in Iranian Rials (IRR) and Dollars (USD) based on average exchange rate in each year. These costs were compared to GDP per capita, the salary of lowest paid worker in MOH and standard cost of household basket which officially announced by the central bank. **RESULTS:** Tetracyclines (J01A) and Sulfonamides (J01E) were the cheapest antibacterial treatments while Amphenicoles (J01B) and unclassified antibacterials such as Vancomicine (J01X) were the most expensive treatment for bacterial infections. The average cost of antibacterial medicines was 0.3USD/DDD which equals to 3.5% of daily income of the lowest paid worker and 2.5% of daily GDP/capita. The trend of comparative costs did not show any significant changes during the period. **CONCLUSIONS:** A moderate growth was observed in daily cost of antibacterial therapy while IRR is the unit of measurement. But when the currency changes to USD or when costs compare to daily income of the lowest paid worker or to GDP/Capita, No growth was observed. Apart from changes of the trends, the cost of antibacterial therapy was too cheap to put a catastrophic expense on the health system.

PHP14

THE IMPLEMENTATION OF ESSENTIAL MEDICINE POLICY IN CHINA: PROS AND CONS

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Establishing essential medicine policy (EMP) is one of 5 health system reform pillars in China in 2009. After three-year implementation, the strengthens and weaknesses of EMP need to be monitoring and evaluation. **OBJECTIVES:** The paper reviews the process of listing, pricing, purchasing, utilization and reimbursement of essential medicines and discusses the achievements and issues of EMP. **METHODS:**

The EMLs are collected and compared from 31 provinces; the indictors of EDP are evaluated before and after implementation. **RESULTS:** Although national EDL only contains 307 essential medicines, the number of added EMs in provincial EDL are various from 64 through 455. The zero-markup policy of EDs conducted in public grass-roots health facilities (urban community health centers and rural township hospitals) have reached to 98.8%. More than 95% EDs can be reimbursement by medical insurance schemes. The average percentage of price cutting was 25%-50% after tender bidding and purchasing. Quality assurance and sufficient provision of ED became a problem. The number of essential medicines is still not meet the needs of outpatients so that patients flow back to the secondary and tertiary hospitals, the financial subsidies from government usually are not supported timely. Along with the expansion of EDP in village health posts and hospitals, how to incentive and maintain the income level of health professionals have to be considered. **CONCLUSIONS:** To promote the EMP, the adjustment of EDL is required in 2012. The criteria of selection on essential medicines in provincial level should be unified. The implementation of EMP will not be successful in village and urban hospital level until solving the problem of remuneration and payment system in health settings.

PHP15

COMPARISON OF HEALTH EXPENDITURES AND DRUG EXPENDITURES IN TWO WESTERN BALKAN COUNTRIES

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OBJECTIVES: To compare health expenditure as total % of GDP, per capita PPP and in US dollars as well as total drug expenditure with top ten ATC groups with highest expenditure in 2009 and 2010 in Bosnia & Herzegovina (B&H) and Croatia (CRO). **METHODS:** Research was based on data published in latest official annual reports from two national Drug Agencies, from B&H and CRO, and official reports from The World Bank. Analysis was performed for all drugs and top ten ATC groups were identified and compared in both countries for two years – 2009 and 2010. **RESULTS:** The Health expenditure; total (% of GDP) in B&H was 10.94 in 2009 (10.31 in 2008), CRO - 7.83 in 2009 (7.83 in 2008). In 2009, total drug expenditure in B&H was 238.8 mil EUR compared to 269 in 2010 (increase of 11,23%), while in CRO in 2009 it was 625.6 mil EUR compared to 664.5 in 2010 (increase of 5,85%). Top 10 ATC 1st level drug groups with highest expenditure in both countries in 2009 and 2010 were rather similar but on ATC 2nd level we observed significant differences in the share of relevant ATC groups with leading C09, J01 and L01 for 2009 and C09, J01 and A10 for 2010 in B&H. Leading groups in CRO for 2009 were L01, J01 and C09, and for 2010 J01, C09 and L01. No drugs from C10 group were present in top ten ATC 2nd level in B&H as well as R03 in 2009 and 2010 unlike the CRO. **CONCLUSIONS:** CRO has a stable total health expenditure and universal health care system with twice smaller increase in total drug expenditure compared to B&H. B&H is a country with decentralized health care system including drug politics and positive reimbursement drug lists which need to be equalized.

PHP16

REMOVING THE BARRIER OF COST TO SMOKING CESSATION MEDICATIONS UNDER THE AFFORDABLE CARE ACT OF 2010

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OBJECTIVES: As part of the Affordable Care Act of 2010 (ACA), smoking cessation medications (SCMs) including bupropion, varenicline, and nicotine-replacement drugs, will be provided at no cost to people with health insurance. However, the scope of the potential impact of this policy was unclear. This study explored which populations would benefit from this mandate. **METHODS:** A retrospective cross-sectional study using the nationally representative Medical Expenditure Panel Survey 2009 was conducted. Adults who currently smoke, advised by doctors to quit smoking, or diagnosed tobacco-use disorders were extracted for analysis (weighted N=40,095,913). Chi-square tests and one-way ANOVAs were conducted to examine the heterogeneity in SCM use and related out-of-pocket expenses with respect to socio-demographic factors. A logistic regression was performed to examine the associations between socio-demographic factors and SCM use. All analyses were weighted based on complex survey design. **RESULTS:** Of the 40,095,913 smokers, only 3.1% of them used SCMs in 2009, whereas 52.1% were advised by doctors to quit smoking. Chi-square analyses revealed significant differences in SCM use based on race/ethnicity, relationship status, health insurance status, HMO status, perceived mental health status, and comorbid depressive/bipolar disorders (all $p<0.001$). Uses in buprorion and varenicline also varied with health insurance status (both $p<0.05$). There were significant differences in out-of-pocket expense for SCMs between smokers with different insurance status, with the uninsured paying the highest out-of-pocket price ($p<0.001$). The logistic regression revealed that non-Hispanic blacks were less likely to take SCMs compared with Hispanics (OR=0.30, $p<0.01$). **CONCLUSIONS:** Cost is a substantial barrier to SCM use among smokers. Once this barrier is lifted with the ACA, many smokers who do not currently use SCMs are likely to use SCMs unless they have unfavorable attitudes towards SCM use and smokers who currently use SCMs might switch to more effective but expensive SCMs.

PHP17

CONSUMPTION PATTERNS, TRADITIONAL MARKET AND REGULATION IN THE PHARMACEUTICAL INDUSTRY. EVIDENCE FOR TWO THERAPEUTIC GROUPS IN INSURED POPULATION

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OBJECTIVES: This paper proposes, based on a theoretical framework for estimating demand functions under uncertainty, to highlight the importance of including economic variables of market operation and actors strategic organization in the design of regulations on the pharmaceutical sector. They can contribute beyond the value of pharmacological and clinical tools in the specification of standards within a framework of evidence-based medicine and the dynamic analysis of cost-effectiveness in decision making from an institution of sectoral superintendence of social insurance. **METHODS:** With a database of 9147 and 27647 comments on covered population prescriptions by social security in Argentina, we analyze the therapeutic groups of hypertensive and lipid lowering, respectively, by the classical least squares estimation and logistic models for each product. **RESULTS:** The data provide consistent messages about the presence of differentiation mechanisms that overshadow the traditional negative relationship between price and sales. In particular, the interaction between brand and drugs, which can be extended to technological changes in a dynamic context, implies a complementary perspective in designing the regulatory framework. **CONCLUSIONS:** The power of negotiation and establishment of rules of producers must be considered in each particular case, to coordinate incentives to encourage rational behavior in prescribing, moving in a pattern of more cost-effective.

PHP18

INTRODUCING THE WESTERN P&MA MODEL IN THE MIDDLE EAST: UAE AS A CASE STUDY

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OBJECTIVES: There is a need as well as a demand for understanding the influences that are changing the landscape in terms of pharma management in the Middle Eastern region. This research is focussed on the UAE, one of the pioneers of a formal pharmaceutical assessment, to understand drivers of reform and implications. **METHODS:** Initial desk research was conducted to understand trends in reimbursement decisions and pricing of drugs. This was followed by in-depth interviews with 4 stakeholders in the Emirati system to understand historical influences, current trends, drivers for decision making and future changes expected. These data were analysed qualitatively to produce results. **RESULTS:** All respondents (n=4) thought of the UAE as one of the regional pioneers of adopting Western-style pharmaceuticals management systems. The imminent introduction of US-style PBMs is likely to be a major step in this direction. In addition, the government are working on the development of a centralised patient record that will include GCC/ME countries. This will help providers access patient history easily, prescribe more efficiently, avoid medication errors amongst other things. The increasing cost of drugs associated with the universal health insurance system (doubled national fund for the purchase of medicines this year) along with the high use of imported drugs was thought to be the most important driver for reform by majority of the respondents (n=3). All respondents were aware of the regional influence of the UAE reforms. **CONCLUSIONS:** P&R of pharmaceuticals is expected to move from a chaotic system to a more transparent, regulated one that requires submission of PE evaluations and clinical evidence. The MOH has already started developing a patient registry to assess validity claims from manufacturers. In a country where most of the drugs are imported due to lack of local manufacturing capabilities, it will become an increasingly important market for international manufacturers.

PHP19

CONSUMPTION OF DRUGS FOR PEPTIC ULCER AND GASTROESOPHAGEAL REFLUX DISEASE: STRIKING DIFFERENCES BETWEEN SERBIA AND NORWAY

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OBJECTIVES: To analyze the consumption of medicines for the treatment of peptic ulcer and gastroesophageal reflux disease (ATC subgroup A02B) in Serbia in correlation with Norway. **METHODS:** Data on drug utilization in 2009 have been provided by the annual reports of the Agency for Drugs and Medical Devices of the Republic of Serbia and the Norwegian Institute for Public Health. The results were expressed as the number of defined daily doses per 1000 inhabitants per day (DDD/TID). A qualitative analysis was carried out according to the Drug Utilization 90% (DU90%) approach. **RESULTS:** The overall consumption of medicines for peptic ulcer and gastroesophageal reflux disease was twofold lower in Serbia than in Norway (21.16 DDD/TID vs. 42.31 DDD/TID). Histamine H2-receptor antagonists accounted for 73% (15.43 DDD/TID) of A02B medicines consumption in Serbia versus 14% (6.11 DDD/TID) in Norway. Whereas in Serbia, proton pump inhibitors participated with 26.26% (5.56 DDD/TID) within A02B subgoup utilization, the share of these medicines in Norway was 84.42% i.e. 35.72 DDD/TID. Within DU90% segment, 4 (of 7) medicines have been found in Serbia and 5 (of 10) in Norway. The most commonly used medicines within A02B subgroup in Serbia were ranitidine (60.9%, 12.9 DDD/TID), omeprazole (12.7%, 2.69 DDD/TID), famotidine (11.9%, 2.53 DDD/TID), and pantoprazole (7.7%, 1.63 DDD/TID), whilst in Norway were esomeprazole (33.9%, 14.34 DDD/TID) followed by pantoprazole (19.3%, 8.18 DDD/TID), omeprazole (15.7%, 6.67 DDD/TID), lansoprazole (15.4%, 6.53 DDD/TID) and ranitidine (10.6%, 4.51 DDD/TID). **CONCLUSIONS:** Besides the quantity, the pattern of use of medicines for peptic ulcer and gastroesophageal reflux disease showed differences between observed countries. Differences in prescription regulations, price and reimbursement most likely influenced the type and amount of medicines consumed.